



ARRROL
ASTER

The
23/70 H.P.
ARROL-ASTER
"STRAIGHT-EIGHT"
SINGLE SLEEVE VALVE
CAR

ARROL-JOHNSTON & ASTER ENGINEERING
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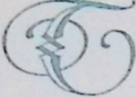
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*The illustrations and specifications contained in this catalogue are intended
as a general guide only, and are not to be taken as binding in every detail*



INTRODUCTION

 HIS is a day of multi-cylinder power units, and engineers recognise that, for powers above 20 h.p. R.A.C. rating, modern standards of performance and comfort call for nothing less than an eight-cylinder.

The eight-cylinder has several advantages, such as the better balance and more even torque, and the entire absence of vibration at all speeds. Its great flexibility, too, means less gear changing. These points in turn result in a longer life for all parts of the chassis and body.

The Arrol Johnston and Aster Engineering Company, with their long experience of engine building, have produced a straight eight-cylinder of unique design, incorporating a larger version of the single sleeve valve engine, which has proved so successful, and developing 70 b.h.p., though the tax is but £23 per annum.

The chassis will have the same features, *e.g.*, the one-shot lubrication and Silentbloc suspension, as the successful 17/50 h.p. model. An outstanding point is the low build of the chassis so as to give a maximum degree of safety and to accommodate the most stylish coachwork without any sacrifice of head room.

The new principle behind the Arrol-Aster sleeve valve system is one of those wonderful ideas which everybody recognises as a great discovery, because once you see how it works it all looks so obvious and simple. You are led at once to ask why didn't somebody think of that before? It is a principle which is bound to have a profound effect on motor car engineering as soon as its advantages become more generally recognised.

To explain it in its easiest terms, the Arrol-Aster sleeve valve performs a complete rotatory movement, whereas sleeve valves in earlier systems performed only a vertical movement with a corresponding return. The obvious advantages of the Arrol-Aster system are a smooth rhythmic action instead of a series of jerks, and also by means of a curious eccentric valv shaft, all special valve operating mechanism is completely done away with.

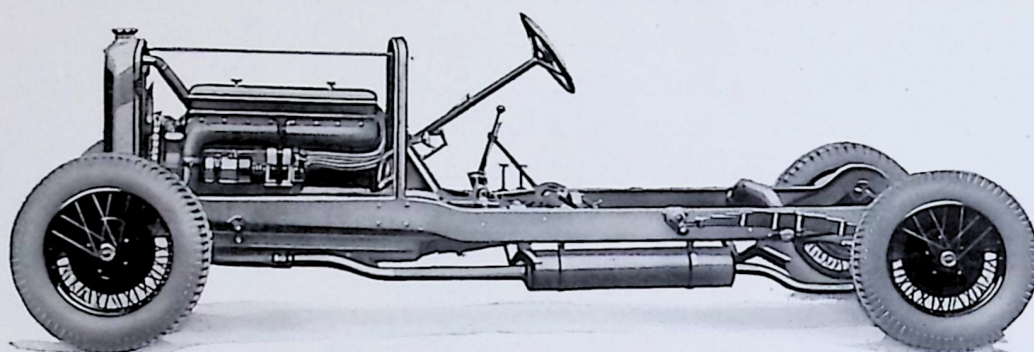
The results obtained from this radically new sleeve valve system—based on what the Arrol-Aster engineers quite truthfully call a “master principle”—are little short of astounding. The full possibilities of the sleeve valve for smoothness, silence and speed, are at last being given absolutely full play. The following fact provides most graphic illustration of the difference that this has made. On the first models of this car a standard speedometer of well-known make was fitted, and the noise of the speedometer drive was heard so clearly above the purr of the engine that it has since been necessary to fit a different speedometer, the chief qualification of which is its quietness. Speed has also been enormously increased, and it can safely be said that there are no other cars of the same weight and horse-power, exclusive of specially tuned machines, which can give the same constant high engine speeds without the slightest forcing.

This eight-cylinder Arrol-Aster has sufficient power to carry the heaviest bodies. Yet it remains a delightfully easy car to drive, and, with its ample reserve of power and light controls, will give an exhilarating performance under the most arduous conditions.

The prices are reasonable, and we are convinced that, in the sphere of the larger luxury car, this new model contains the same standard of sterling value as our former cars.

Specification of the
23/70 H.P. ARROL-ASTER
"Straight-Eight"
SINGLE SLEEVE VALVE CAR

*with One-Shot Lubrication, Silentbloc Shackles
and Chromium Plating*



Chassis £698

"Millam" Free Wheel and Sprag £28 extra

Chassis		Overall width	5' 8"
Wheelbase	11' 4"	Minimum ground clearance	9"
Track	4' 8"	Road Wheels: Detachable, wire.	
Overall length... .. .	15' 2½"	Tyres: 33" X 6" DUNLOP Low Pressure Cord.	

Frame: Of exceptionally deep section, dropped at rear of engine to give lowest possible seating position and centre of gravity, being upswept over rear axle.

Engine

Eight cylinders cast in line ahead *en bloc*. Bore: 67.5 mm. X 110 mm. stroke. 3.257 litres capacity, R.A.C. rating 22.4 h.p. Government tax, £23.

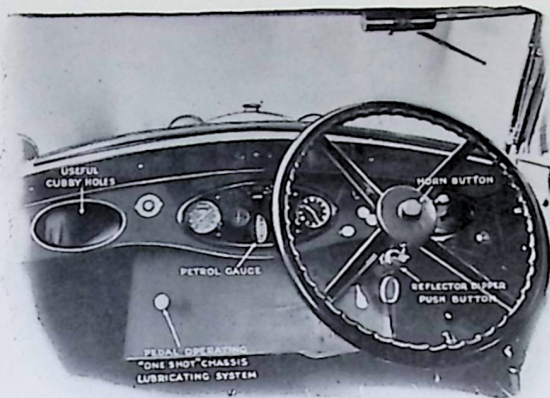
This engine is fitted with single steel sleeve valves operated by an entirely new mechanism ensuring maintenance of silence and freedom from wear. All the valve-operating gear is incorporated in the cylinder casting, enabling

the cylinders, complete with sleeves and all operating gear, to be lifted as one unit, considerably facilitating overhauling work.

The cylinders, which are cast iron, are mounted on an aluminium crankcase, which is divided horizontally in the usual manner.

The sump, which is of ample oil capacity, is well ribbed and furnished with large inspection plate, oil filter, etc.

The crankshaft, which is counter-balanced, is supported in five bearings and has both pins



and journals of exceptional diameter. It is fitted with the Aster-Lanchester Torsional Vibration Damper on the first throw. The balancing of the crankshaft receives a considerable amount of attention, static and dynamic balance being carried out on special machines to a high degree of perfection, enabling the engine to run without any perceptible vibration over its full range of speed. BEARINGS: All bearings are of white metal with bronze shells, and are manufactured under a patented process which provides for pre-determined oil film between the shaft and the bearing. This eliminates the necessity of careful running in by the owner during the first thousand miles and ensures a harder and unscratched face on the bearing, ensuring many thousand more miles running than with an ordinary type of scraped-in bearing. The pistons are of the Aster patent type, and embody all the advantages of an aluminium piston with none of its disadvantages. They are entirely free from slap, and as no aluminium is in contact with the sleeve, that lapping action which is a common characteristic of aluminium pistons is entirely eliminated. The cylinders are provided with junk heads, in which the sparking plug is placed, and are exceptional, inasmuch as they have a forced circulation of cooling water, ensuring a minimum of carbon deposit and entire freedom from hot spots, etc.

Lubrication

Is forced through the crankshaft and valve-shaft and feeds under pressure to all engine bearings, with the exception of gudgeon pins which are fully floating in the pistons and rods. A level indicator giving clear indication of the contents of the sump is provided.

Carburettor

Of the automatic type is attached to a water-jacketted inlet manifold.

Ignition

High-tension magneto, with variable spark control on steering quadrant, is fitted in such a manner and in tandem with the dynamo that in the event of it being desirable to remove the dynamo, the magneto can be moved up on to its bed. K.L.G. sparking plugs are fitted as standard.

Cooling

By centrifugal pump driven from front side of chain case by auxiliary drive spindle.

Mounting

The engine is mounted on three points and is entirely insulated from frame by rubber bushings ensuring the elimination of all twisting strains and preventing the transmission of any secondary periods to the occupants of the car.

Clutch

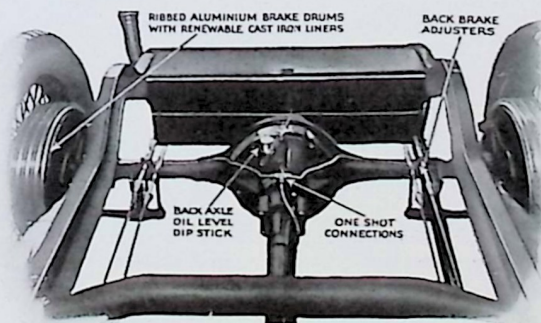
An improved design of the dry single plate type, consisting of a steel driving plate working between two Ferodo-faced plates kept in engagement by six helical springs. The adjustment has been simplified to such an extent that a slipping or fierce clutch can be immediately rectified. The driven portion of this clutch is extremely light, greatly facilitating gear changing.

Universal Joint

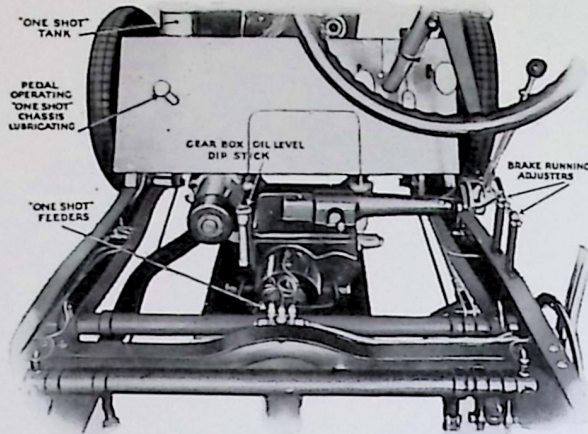
Is of the ring and stud type, situated in a torque head casing, automatically lubricated, the bearings being hardened and ground.

Drive

The drive is transmitted from the gear box to the back axle by a drive shaft (enclosed in a mild steel torque tube bolted to the back axle casing) through a spiral pinion and bevel. All lubrication is automatic. The provision of a



SPECIFICATION of the 23/70 h.p. ARROL-ASTER "STRAIGHT-EIGHT"—*continued*



torque tube eliminates the transmission of any torque to the springs and ensures their functioning solely for the purpose for which they were designed.

Back Axle

Of the full floating type with banjo type centre casing fitted with large inspection cover at rear, allowing for the examination of the gears or their withdrawal without interfering with the back axle as a unit, the final drive being by spiral bevel.

Front Axle

This is formed from a single steel H-section stamping, the section towards the heads returning to almost circular to accommodate the strain imposed on it by front wheel braking. The road wheels are carried on two tapered roller bearings adjusted by the spindle nut secured in position by a locking ring.

Springs, Front and Rear

The rear springs are full cantilever, fitted with anti-rebound clips, and all shackles are fitted with Silentbloc bearings, ensuring absolute silence and entire freedom from the necessity of lubrication. The forward springs are semi-elliptic and the shackles are similarly treated.

Steering

Is of the worm and complete wheel type, accurately machined and designed to give extremely sensitive and durable steering. The track rod and drag link terminals are of a special ball and socket type with automatic lubrication. The gear is so arranged that in case of wear the wheel can be turned to present an unworn surface to the worm.

Brakes

Six brakes in all are fitted; four (two Self-Servo) operate on the four wheels by the foot, and two on the rear wheels by the hand. These are cable-operated, fully compensated, and incorporate the well-known Arrol-Aster adjustment carried to the running boards, enabling compensated brake adjustment to be made whilst the car is actually travelling. Brake drums are of ribbed aluminium with cast-iron liners which are renewable. Brake shoes are of aluminium and are faced with die-pressed anti-friction material. All brake bearings are automatically lubricated.

Clutch and Brake Pedals

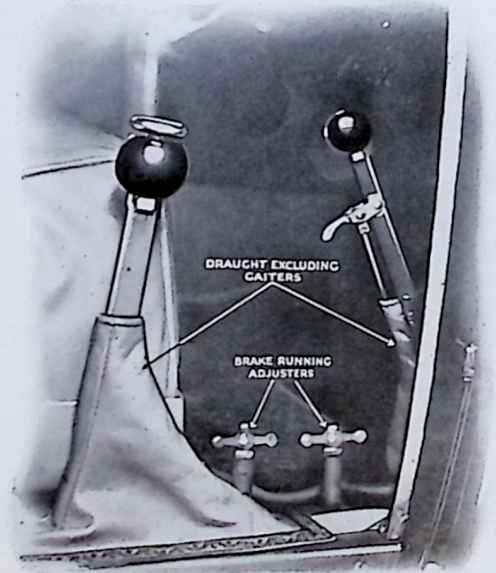
These are situated on the foot-plate to the left and right of steering column, and are so arranged to automatically accommodate the angle of the foot.

Control

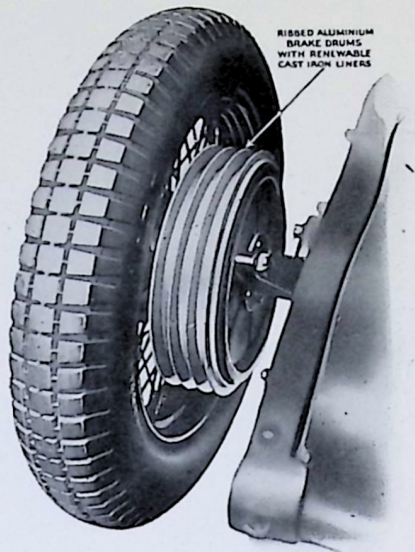
Is by hand and foot accelerator. The pedal for the foot control is placed between brake and clutch pedals. A hand control is provided mounted on top of steering column on the same quadrant as the variable ignition control, the whole being surmounted by the Horn Button.

Road Wheels

Detachable wire type. Spare wheel complete with tyre included and carried on a universally-hinged bracket permitting the position of



SPECIFICATION of the 23/70 h.p. ARROL ASTER "STRAIGHT-EIGHT"—*continued*



wheel to be adjusted to prevent rubbing in the wheel well, and also relieving the wings and running boards entirely of the weight of the spare wheel.

Tyres

33" X 6" Dunlop Low Pressure Cord are fitted as standard.

Frame

Of exceptionally deep section, dropped at the rear of engine to give the lowest possible seating position and centre of gravity, and upswept over rear axle. It is due to this low centre of gravity, giving a low overall height of car without sacrificing interior head room, that the graceful appearance and wonderful road holding qualities of the car are due.

Radiator

Of the film type, constructed in such a way as to make fracture, due to vibration, almost impossible, and so mounted as to entirely eliminate any frame strains being transferred to the radiator.

Four-speed Gear Box

The four-speed gear box with right-hand change is built up in a casing bolted up to the rear end of the engine crankcase, and which

also contains the clutch. It is of the selective gate-change type operated by a single lever. All the main shafts are mounted on ball-bearings. The lay-shaft is immediately beneath the main shaft and is wholly immersed in oil. An oil filler is fitted on the side of the box and also shows the correct level of the oil. The cover is easily removable to afford inspection of gears, all the gears being profile ground ensuring lengthened life and comparative silence.

Fuel Tank

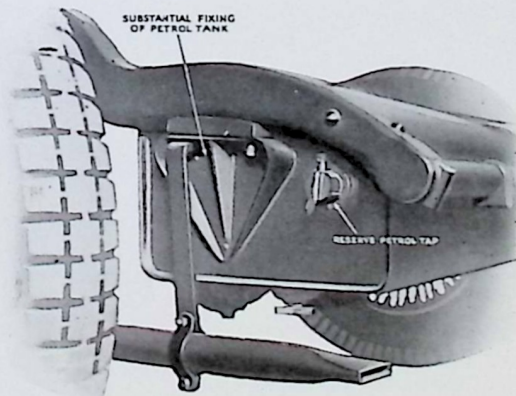
At rear of chassis—provided with level gauge mounted on dash and reserve cock trapping two gallons, feeding the engine by means of an Autovac placed on the dash under the bonnet.

Chassis Lubrication

One-shot lubrication provides the necessary lubrication to all parts of the chassis which are fed at will by the compression of a plunger placed on the toeboard. This system is one of the most refined in existence and ensures a pre-determined amount of lubrication being fed to each part of the chassis needing it. A tight bearing must receive its pre-determined share of oil and a loose bearing cannot receive more than its share. A fractured pipe will not starve the system, but will result in the bearing to which it leads only failing to receive its supply.

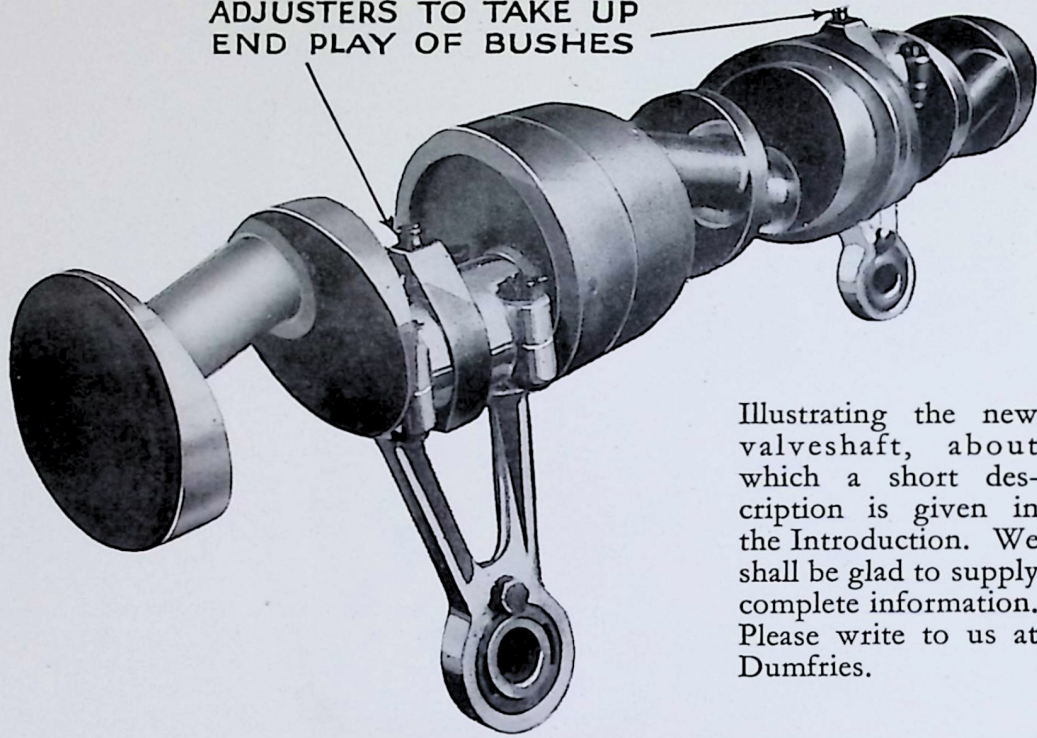
Equipment

12-volt two-unit lighting and starting; speedometer clock; petrol gauge; oil gauge; dipping headlights; shock absorbers; spare wheel and tyre; concealed dash light.

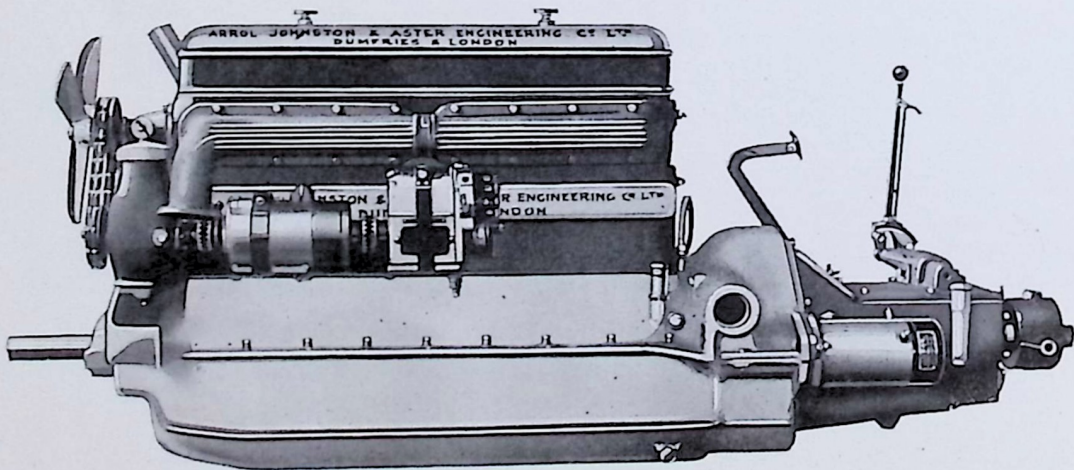


THE FAMOUS ARROL-ASTER VALVESHAF

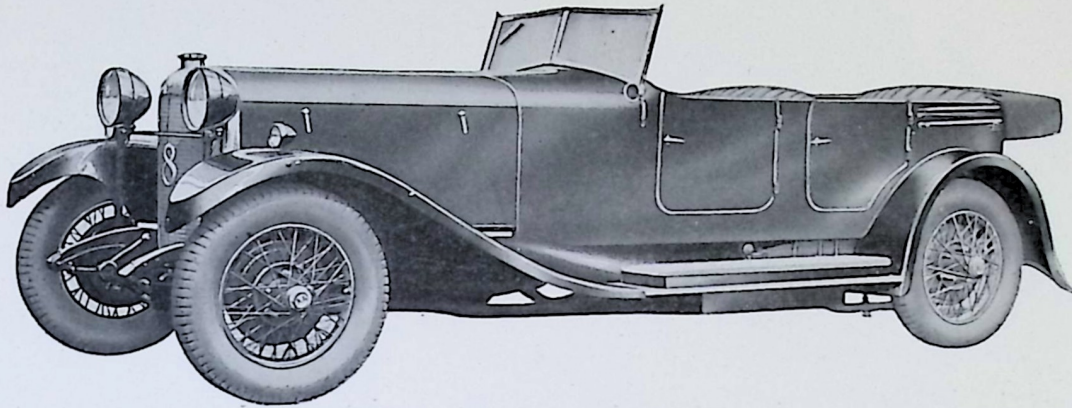
ADJUSTERS TO TAKE UP
END PLAY OF BUSHES



Illustrating the new valvetrain, about which a short description is given in the Introduction. We shall be glad to supply complete information. Please write to us at Dumfries.



ARROL-ASTER



The 23/70 h.p. ARROL-ASTER 5-Seater **TOURER**

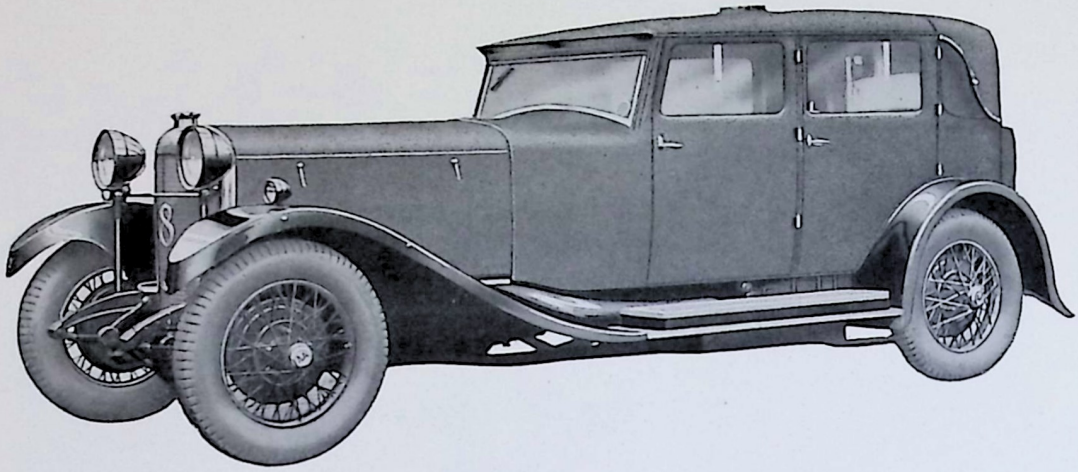
THE confidence placed in the engine and chassis is the foundation of care-free motoring. Highest grade alloy steels, chrome nickel instead of the usual carbon steel, subject to the most rigid tests, front axle, transmission gears and shafts, rear axle components, even piston rings are tested for hardness, perfect alignment and concentric fit. It is this undeviating adherence to highest quality in every detail which makes all Arrol-Aster cars give economical, care-free service. It is an ideal fast touring car of graceful lines.

BODY.—Open five-seater touring with four wide doors; one-man hood and rigid side curtains which have very narrow but strong metal framework affording good visibility together with complete protection; folding glass windscreen; automatic screen wiper; driving mirror; luggage grid; finished in cellulose; black, blue, brown or grey to choice, the upholstery being brown antique real leather.

Price £798

Splintex Reinforced Glass .. £4 extra
"Millam" Free Wheel and Sprag £28 ..

ARROL-ASTER



The 23/70 h.p. ARROL-ASTER 5-Seater FABRIC SALOON

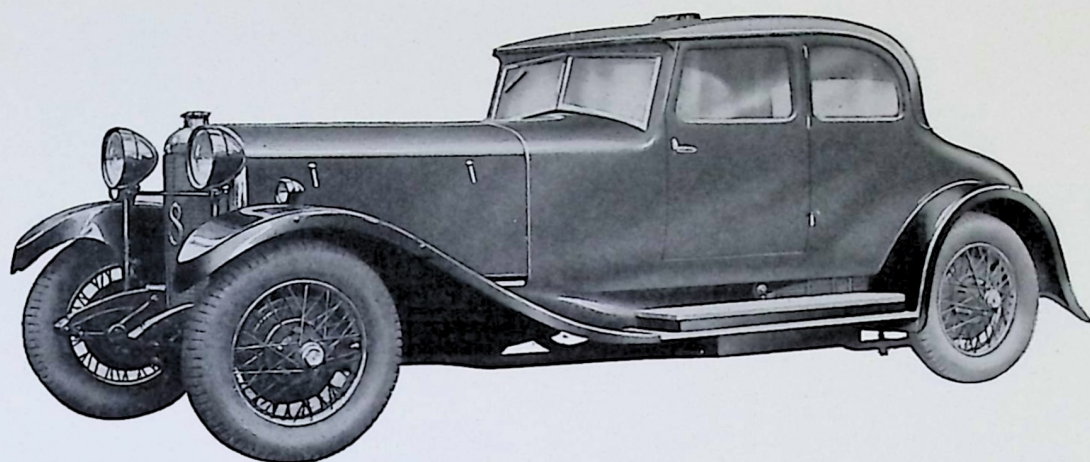
THIS car is undoubtedly a pleasing one to the eye. There is something quite out of the ordinary about it. In all weathers the fabric body is always fresh looking, and the extremes of summer heat and winter cold have no appreciable effect on its surface. The new Arrol-Aster sleeve valve system reduces enormously the amount of noise made by the engine. All the clatter of the valve gear is entirely eliminated. For a full realisation of the relaxing comfort this silence of the engine affords, and the gentle buoyancy of the leather upholstery, with the deep roominess which gives privacy to the occupants without in any way obscuring their view, one must experience the joy of motoring in this car. The owner of a 23/70 h.p. Fabric Saloon "straight-eight" has made certain of a wise motor car investment and has the satisfaction of knowing that his car is recognised and known as the fullest measure of motoring excellence.

BODY.—Roomy, fabric saloon, with four wide doors; to seat five; adjustable windows; two large lights incorporated in back panel; fitted with spring roller blind, operated from driver's seat; adjustable front seats; large travelling trunk to rear; automatic screen wiper; folding windscreens; driving mirror; roof ventilator; ladies' and gent's companions; rope pulls; electric roof lamps, etc.; exterior finish in black or brown; luxuriously upholstered in sealing wax red leather or brown furniture hide.

Price £798

Splintex Reinforced Glass .. £19 extra
"Millam" Free Wheel and Sprag £28 ..

ARROL-ASTER



The 23/70 h.p. ARROL-ASTER 3/5-Seater COACHBUILT COUPÉ

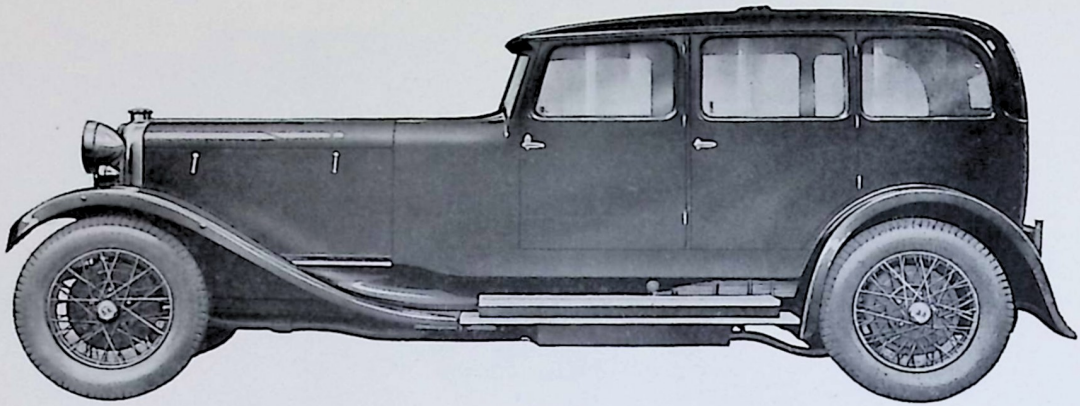
*T*HIS is surely the ideal coupé. Note the graceful curving of the sides, the arching dome of the rear with its elegant forward drooping. A perfect blending of lines and contours. Comfortable, noiseless, smooth-running is assured. The new special valveshaft and sleeve valve mechanism operates without the slightest hindrance in its path over the cylinder. There is no sudden change of direction. As the piston goes up and down the sleeve valve follows it with a continuous vertical and radial movement. The problem of an unbroken movement has been solved.

BODY.—Roomy, coachbuilt three/five seater of special design; two wide doors; adjustable windows; automatic screen wiper; driving mirror; adjustable seat; large light incorporated in rear panel; fitted with spring roller blind, operated from driver's seat; luggage grid; roof ventilator; finished in cellulose; black, blue, brown or grey to choice; luxuriously upholstered in sealing wax red leather or brown furniture hide.

Price £798

Splintex Reinforced Glass .. £15 extra
"Millam" Free Wheel and Sprag £28 ..

ARROL-ASTER



The 23/70 h.p. ARROL-ASTER 5-Seater COACHBUILT SALOON

THE construction of this model embodies motoring comfort with good appearance. The chassis carries the unique Arrol-Aster sleeve valve mechanism. Result, no jarring; just a soft smoothly running engine that can scarcely be heard. Other points of interest include a driving-position control for taking up wear in the brake linings, one-shot lubrication controlled by pedal, extra large brake drums, a draught cover for the hand brake and a casing for all cables fixed to the engine side of the dashboard so that all wiring connections are neatly covered. The coachwork presents an attractive feature in its high waistline which gives a very stylish appearance. The beauty of the interior is inviting and companionable; nothing superficial, nothing lacking, substantial and withal graceful.

BODY.—Roomy, coachbuilt, with four doors, fitted with locking device; to seat five; two front seats adjustable; folding windscreen; adjustable windows; large light incorporated in rear panel; spring roller blind, operated from driver's seat; automatic screen wiper; roof ventilator; ladies' and gent's companions; luggage grid; rope pulls; finished in cellulose; black, two shades of blue, brown or grey to choice; luxuriously upholstered in sealing wax red leather or brown furniture hide.

Price £798

Splintex Reinforced Glass .. £22 extra
"Millam" Free Wheel and Sprag £28 ..

ARROL-ASTER

Announcement

The 23/70 h.p.
Arrol-Aster "Straight-Eight"
Single Sleeve Valve
Car

is supplied as a Sports Model

Price £900

and as a Super Sports Model
with super-charged engine

Price £980

PARTICULARS ON APPLICATION



TERMS OF BUSINESS

(1) Motor Goods (including Cars and Chassis) are only supplied by the Company on condition—and it is a condition of all Sales by the Company—that they shall not be exhibited at any Motor Exhibition in the United Kingdom other than such as are held by the Society of Motor Manufacturers and Traders Limited or are approved by the Committee of said Society. Purchasers of said motor goods from the Company will be held to acknowledge that they have received notice that the Company, as Members of the said Society have signed, and will continue to sign, Bonds issued by the said Society whereby *inter alia* they agree to pay to the said Society as liquidated damages in respect of each breach such sum not exceeding £250 as the Committee of Council of the said Society may, in accordance with the terms of such bonds, determine, should any of the said motor goods be exhibited at a Motor Exhibition not held by the said Society or approved of by the said Committee. Every such purchaser shall be held to have agreed—and it is a condition of all Sales of said Motor Goods—that such purchaser shall not exhibit said goods at any Exhibition or Show in the said United Kingdom without the written consent of the Company, and that such purchaser shall obtain a like undertaking from all buyers of such goods from him, and that if the Company shall pay or be called upon to pay to the said Society any sum by reason of the exhibition at an Exhibition or Show not held or approved as aforesaid of any motor goods supplied by the Company to such purchaser such purchaser will pay to the Company, on demand, all sums paid, or which may be payable, by the Company to the said Society in respect of such exhibition of said goods.

(2) Prices quoted for Motor Cars, including Chassis, are for delivery at the Company's works, and strictly net and on the following terms, *viz.*—

- (a) 10 per cent. of purchase money to accompany Order, and balance to be paid on advice that the car is ready for delivery.
- (b) Packing for shipment is not included in the price list, and, if required, will be charged extra.
- (c) The Company will use their best endeavours to adhere, as far as possible, to the dates of delivery promised from time to time, but they do not undertake any liability in respect of any delay arising from any circumstances whatsoever (including strikes, lockouts, trade disputes, accidents, fire, *force majeure*, war, civil riot, commandeering, or requirements of Government, difficulties in obtaining workmen or material, delay or failure of sub-contractors to complete their contracts, or circumstances for which the Company are not responsible).
- (d) In the event of delay occurring in delivery, otherwise than in consequence of strikes, lockouts, trade disputes, accidents, fire, *force majeure*, war, civil riot, commandeering, or requirements of Government, difficulties in obtaining workmen or material, delay or failure of sub-contractors to complete their contracts, or circumstances for which the Company are not responsible, purchasers from the Company have right by notice in writing given subsequent to the promised date of delivery (including any altered date of delivery), to cancel the Contract of Purchase at the expiry of one month from the said date of delivery, if the Company do not deliver within that month. In the event of such cancellation taking place, the Company will return the deposit, if any, paid to them, but such cancellation shall not entitle the purchaser to payment of any other sum, whether in respect of damages, compensation, or otherwise.
- (e) Delivery is at the Company's works, and all Orders, whether by letter, Order Form, or otherwise, are only accepted subject to this condition.

(f) The Prices quoted in this catalogue are for delivery at works, Dumfries, and the Dealer is expected to collect delivery charges.

(3) The Company reserve the right to make such increases in their prices, and also such alterations on their Specifications as they may deem desirable without notification, and notwithstanding the terms of orders to apply these increases and/or alterations to any orders in respect of cars or chassis not delivered when such increases or alterations are made, and to charge these increased prices ruling at the time of delivery for any cars or chassis not then delivered and/or to deliver cars or chassis made in terms of these altered specifications ruling at the time of delivery in fulfilment of orders for cars or chassis of similar type not then delivered. Should the price be increased, the buyers have the option of cancelling the order within seven days after being notified of such increase. Illustrations and specifications in the Company's Catalogues are intended only as a general guide and are not to be taken as binding in detail.

Guarantee

The Company endeavour to supply the best material and workmanship, and the sole liability undertaken by the Company is to the following effect, *viz.*—In the event of any defects being disclosed in any motor goods (including cars and chassis) made and sold by them, or in work done by them (including repairs and parts and accessories made by them, but not tyres, detachable wheels, self-starting equipment, electric fittings and accessories and articles not made by the Company), the Company undertake on the return of the alleged defective parts carriage paid to their works (having attached to the same, in cases referring to cars or chassis, the name and address of the owner, the number of the chassis, and the name of the dealer from whom it was purchased), within twelve months from the date of delivery by the Company, and within seven days from the date when the alleged defect is observed, to carefully examine and if found faulty through bad material or workmanship, to repair, or if necessary replace, the same free of charge. It is to be distinctly understood that the above applies in respect of material only, and labour and other expenditure are to be charged. The Company accept no responsibility for any loss or damage direct or consequential or for any accident or in any way for the effect of any accident, whether due to defective material, workmanship or otherwise, and this Guarantee does not apply to defects caused by wear and tear, misuse, or neglect, or overloading, nor to any chassis from which the Company's nameplate has been removed or obliterated. The Company do not accept any responsibility whatever for tyres, detachable wheels self-starting equipment, electric fittings, accessories, or articles not made by them. This guarantee is in lieu of all conditions, guarantees or warranties, whether expressed or implied by Statute or otherwise, and is limited in cases relating to cars and chassis to new cars and chassis bearing the Company's nameplate, bought either direct from the Company or one of their authorised dealers.

The Terms "Agent" and "Dealer"

The terms "Agent" and "Dealer" used by the Company or any party in connection with the sale of the Company's Manufacturers are used in a complimentary sense only. The relationship of principal and agent does not, in fact, exist between the Company and the Agent or Dealer and the Agent or Dealer is not authorised to advertise, incur debts, or transact any business whatsoever in the Company's account, or to give any warranty or make any representation on the Company's behalf other than the foregoing Guarantee.

ARROL-JOHNSTON & ASTER ENGINEERING COMPANY LIMITED DUMFRIES, SCOTLAND

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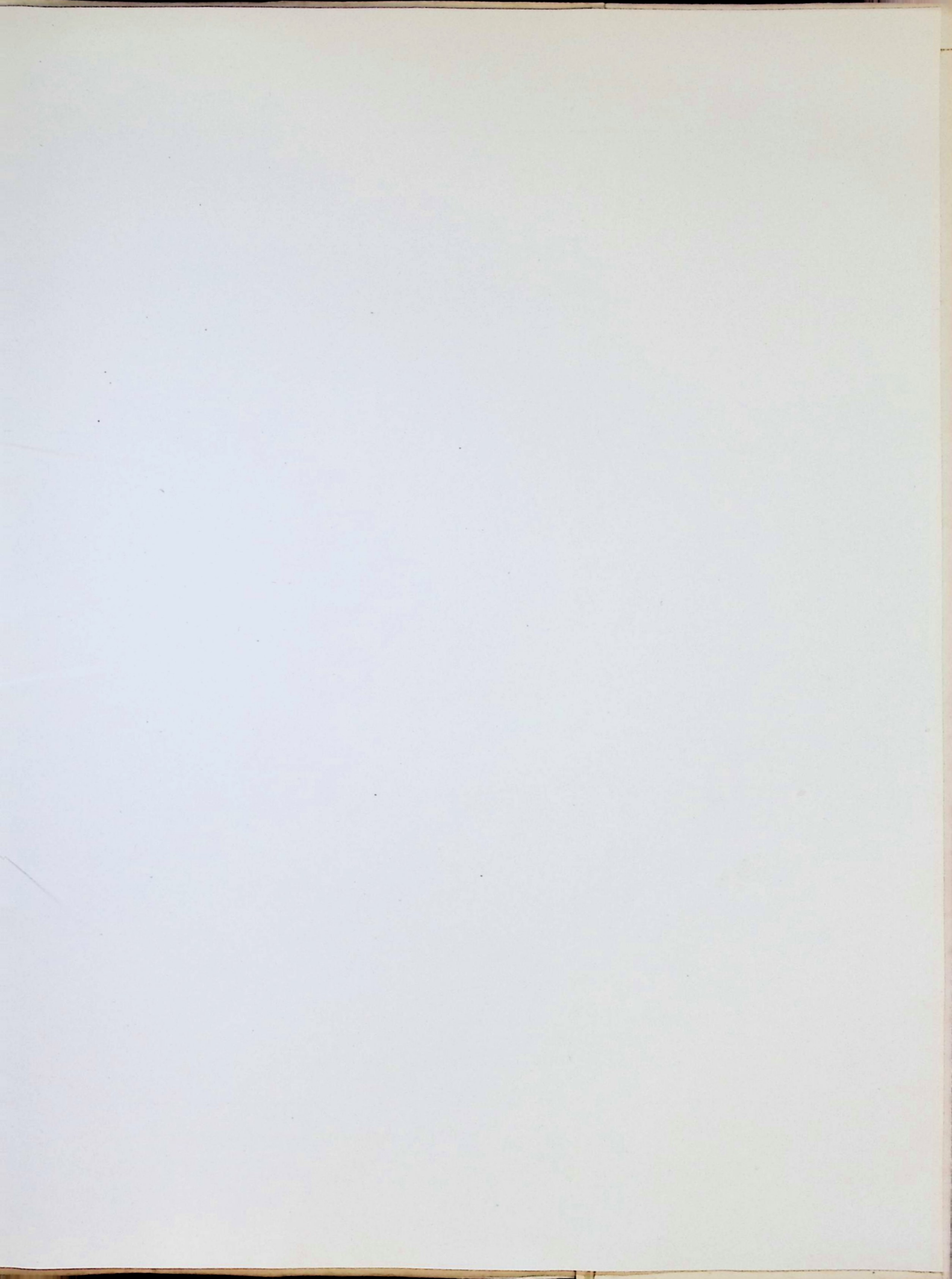
Telegrams: "Mocar, Dumfries"

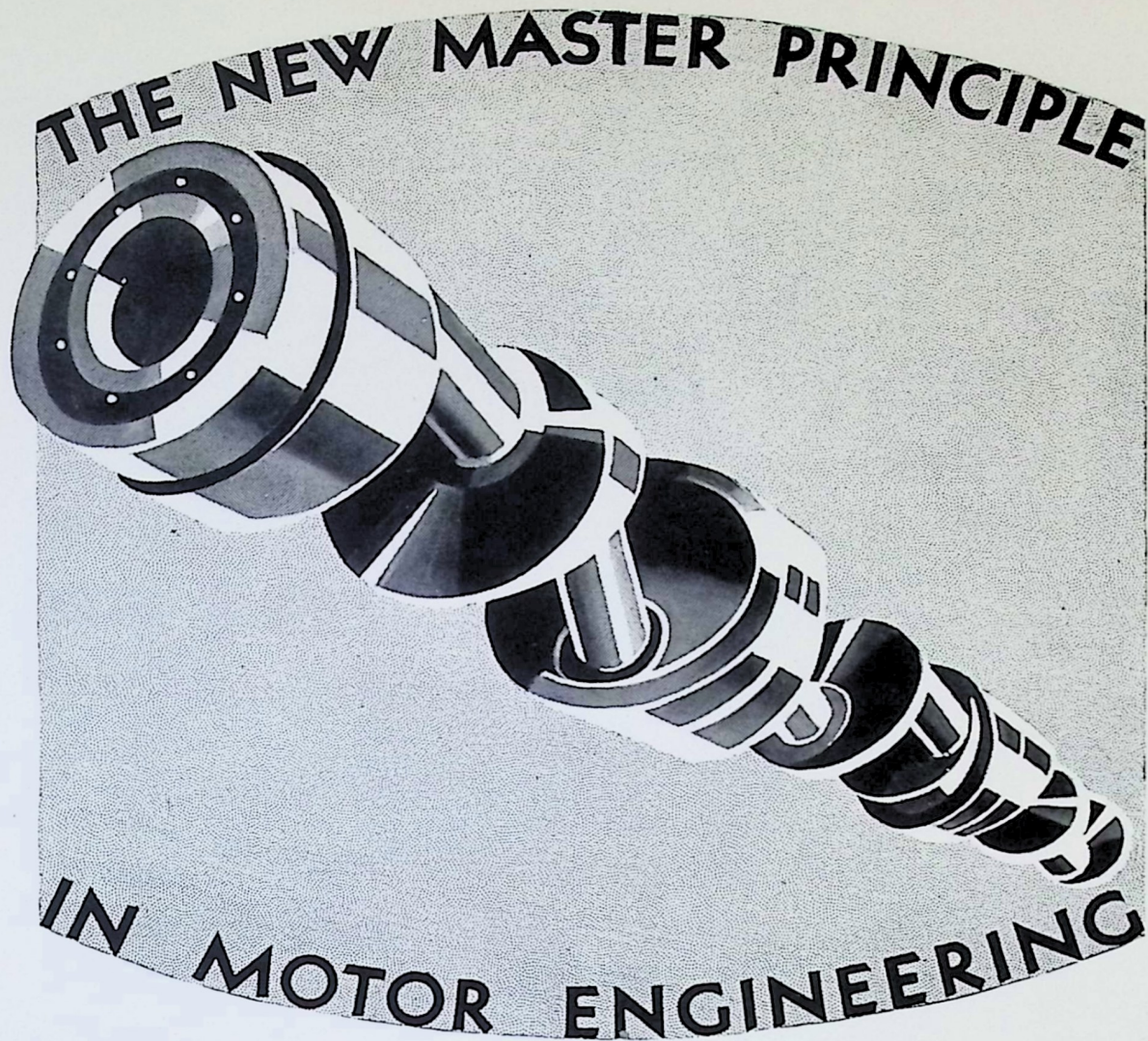
LONDON OFFICES:

224/229 CECIL CHAMBERS, 86 STRAND, W.C.2

Telephone: Temple Bar 7528 and 7529. Telegrams: "Asterenge, Rand"

February, 1929.





IT'S AT OLYMPIA

WHAT is this new master principle? It is the greatest step forward since the discovery of the sleeve-valve engine. It allows the sleeve-valve engine to operate under more ideal conditions than ever before. The valve-shaft is the secret. It substitutes a continuous movement for a jerky one. Unless you have ridden in an Arrol-Aster, you cannot know how much difference this valve-shaft makes, imparting that liveliness, power and acceleration which have hitherto not been a strong attribute of the sleeve-valve engine. It has been tried out for two years, and has aroused enthusiasm everywhere. It is covered by Arrol-Aster Master Patents, and is exclusive to Arrol-Aster cars. Come and see it at Olympia. Stand No. 104.

THE ARROL-JOHNSTON & ASTER ENGINEERING COMPANY, LIMITED, DUMFRIES, SCOTLAND.
LONDON: 224-229 Cecil Chambers, 86 Strand, W.C.2. Telephone: Temple Bar 7528 and 7529. Telegrams: "Asterenge, Rand."
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